

State of the Practice for Bioreactor Landfills

Workshop on Bioreactor Landfills
Arlington, Virginia
September 6-7, 2000

by

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Notice

This document was compiled from presentations and open discussion at an EPA Workshop on Landfill Bioreactors held September 6-7, 2000, in Arlington, VA. The agenda and a list of participants are given in the appendices. Case studies from several states have been included as well. The purpose of the Workshop was to provide a forum for discussion of the state of the art for the bioreactor theory, operation, monitoring, and regulatory control. Comments have not been attributed to individuals in the Workshop. Information presented herein does not necessarily represent the views of EPA, nor is it specifically tied to reference materials. In many cases, the information presented is the opinion of the speaker, generated by his or her background and operations experience. Every attempt has been made to capture the Workshop discussion as a tool for looking at the research and regulatory needs of the landfill industry. The document is not intended as an operational guide and should not be quoted or used as such.

Foreword

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threatens human health and the environment. The focus of the Laboratory's research program is on methods and their cost-effectiveness for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by: developing and promoting technologies that protect and improve the environment; advancing scientific and engineering information to support regulatory and policy decisions; and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
National Risk Management Research Laboratory

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Acronyms

ASTSWMO	Association for State and Territorial Solid Waste Management Officials
B O D	biological oxygen demand
C A A	Clean Air Act
C & D	construction and demolition
c f m	cubic feet per minute
CO ₂	carbon dioxide
C O	carbon monoxide
C O D	chemical oxygen demand
CRADA	Cooperative Research and Development Agreement
C W A	Clean Water Act
D O E	Department of Energy
D Q O	data quality objective
D S W A	Delaware Solid Waste Authority
E P A	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FTIR	Fourier Transform InfraRed
H A P	hazardous air pollutant
HPLC	high pressure liquid chromatography
LIDAR	light detection and ranging
MACT	maximum achievable control technology
M S W	municipal solid waste
MSW -DST	municipal solid waste decision support tool
NCER	National Center for Environmental Research
NMOC	nonmethane organic compounds
N O x	nitrogen oxide
NRMRL	National Risk Management Research Laboratory
NSPS/EG	New Source Performance Standards and Emission Guidelines
NYSDEC	New York State Department of Environmental Conservation
O R D	Office of Research and Development
O S W	Office of Solid Waste
POTW	publicly owned treatment works
P V C	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RD&D	research, development, and demonstration
SBREF	A Small Business Regulatory Enforcement Fairness Act
SCADA	supervisory control and data acquisition
SITE	Superfund Innovative Technology Evaluation
S T A R	Science to Achieve Results
S W A N A	Solid Waste Association of North America
T D S	total dissolved solids
T S S	total suspended solids
V O C	volatile organic compound
W M I	Waste Management, Inc.
X L	eXcellence and Leadership